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A Sierra Monitor Company

**Driver Manual**  
**(Supplement to the FieldServer Instruction Manual)**

**FS-8700-43 VESDA**

**APPLICABILITY & EFFECTIVITY**

**Effective for all systems manufactured after May 1, 2001**

<b>Driver Version:</b>	<b>1.01</b>
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## 1. VESDA Description

The VESDA driver allows the FieldServer to transfer data to and from devices over RS-232 using VESDA protocol. The FieldServer can emulate a VESDA Client.

The information that follows describes how to expand upon the factory defaults provided in the configuration files included with the FieldServer.

## 2. Driver Scope of Supply

### 2.1. Supplied by FieldServer Technologies for this Driver

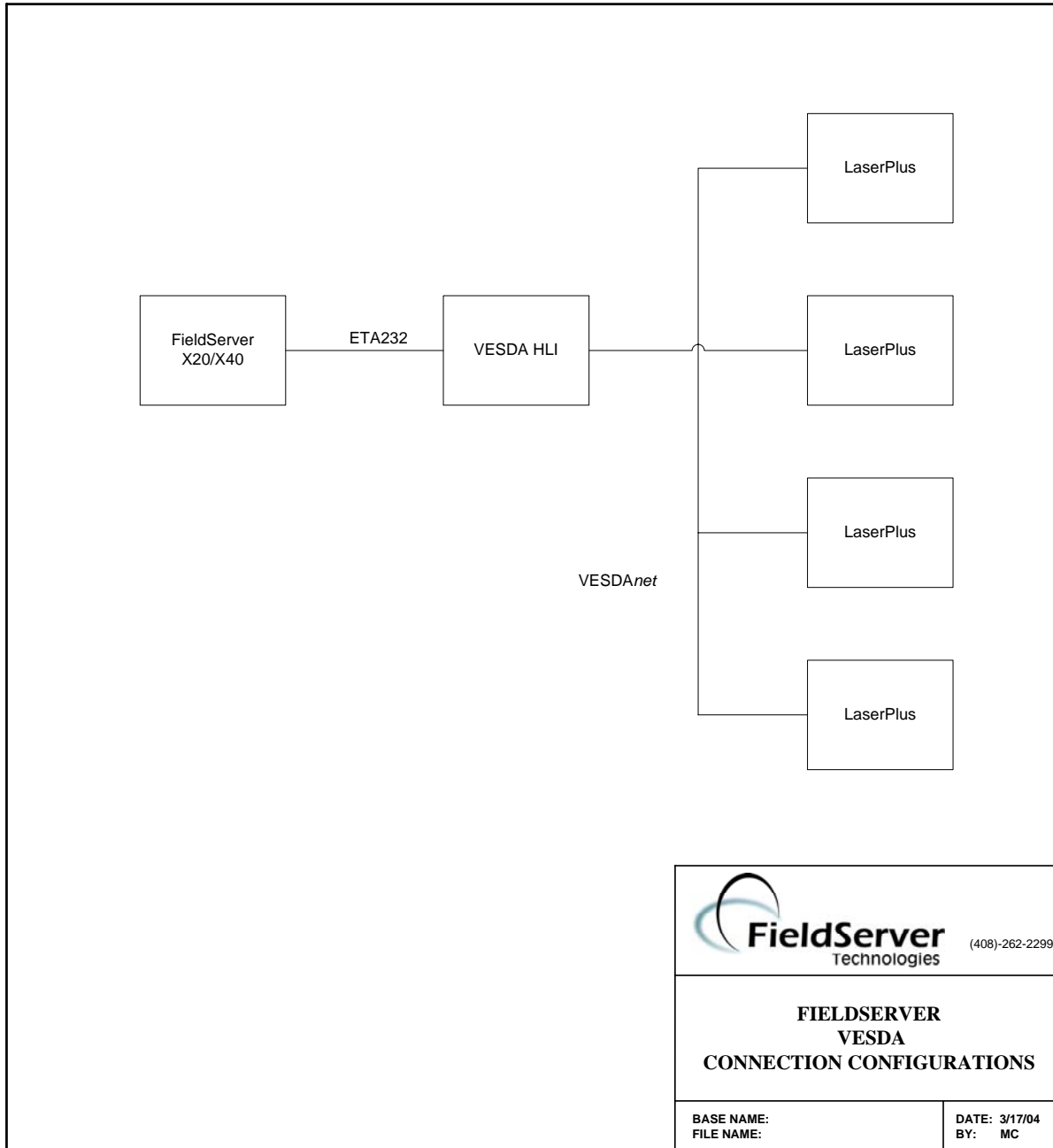
FieldServer Technologies PART #	DESCRIPTION
FS-8915-10	UTP cable (7 foot) for RS-232 use
FS-8917-02	RJ45 to DB9F connector adapter
FS-8917-01	RJ45 to DB25M connector adapter
FS-8700-43	Driver Manual

### 2.2. Provided by Supplier of 3<sup>rd</sup> Party Technology

PART #	DESCRIPTION
	VESDA PC Link HLI

### 3. Hardware Connections

The FieldServer is connected to the Vesda as shown in connection drawing. Configure the Vesda according to manufacturer's instructions



## 4. Configuring the FieldServer as a VESDA Client

For a detailed discussion on FieldServer configuration, please refer to the FieldServer Configuration Manual. The information that follows describes how to expand upon the factory defaults provided in the configuration files included with the FieldServer (See “.csv” sample files provided with the FieldServer).

This section documents and describes the parameters necessary for configuring the FieldServer to communicate with a Vesda Server.

### 4.1. Data Arrays

The configuration file tells the FieldServer about its interfaces, and the routing of data required. In order to enable the FieldServer for Vesda communications, the driver independent FieldServer buffers need to be declared in the “Data Arrays” section, the destination device addresses need to be declared in the “Client Side Nodes” section, and the data required from the servers needs to be mapped in the “Client Side Map Descriptors” section. Details on how to do this can be found below.

Note that in the tables, \* indicates an optional parameter, with the bold legal value being the default.

Section Title		
Data_Arrays		
Column Title	Function	Legal Values
Data_Array_Name	Provide name for Data Array	Up to 15 alphanumeric characters
Data_Format	Provides data format	BIT,FLOAT,BYTE
Data_Array_Length	Number of Data Objects	1-10000

#### Example:

// Data Arrays		
Data_Arrays		
Data_Array_Name,	Data_Format,	Data_Array_Length
set_op,	bit,	32
VESDA01_1_f,	float,	32
VESDA01_1_b,	bit,	32
VESDA01_2_f,	float,	32
VESDA01_2_b,	bit,	32
VESDA01_3_f,	float,	32
VESDA01_3_b,	bit,	32
VESDA01_4_f,	float,	32
VESDA01_4_b,	bit,	32

### 4.2. Client Side Node Descriptors

Section Title		
Nodes		
Column Title	Function	Legal Values
Node_Name	Provide name for node	Up to 32 alphanumeric characters
Protocol	Specify protocol used	VESDA

**Example:**

Nodes						
Node_name,	Protocol,	Port,	Timeout,	Recovery_Interval,	Retry_Interval	
VESDA_HLI,	VESDA,	P1,	10.0s,	-,	-	

### 4.3. Client Side Connection Descriptors

Section Title		
Connections		
Column Title	Function	Legal Values
Port	Specify which port the device is connected to the FieldServer	P1-P8, R1-R2 <sup>1</sup>
Baud	Specify baud rate	19200
Parity	Specify parity	None
Data_Bits	Specify data bits	8
Stop_Bits	Specify stop bits	1
Timeout	Message timeout	10s
IC_timeout	Inter character timeout	1.0s

**Example:**

// Client Side Connections						
//						
Connections						
Port,	Baud,	Timeout,	IC_Timeout,	Parity,	Data_bits,	Stop_bits
P1,	19200,	10.0s,	1.0s,	none,	8,	1

<sup>1</sup> Not all ports shown are necessarily supported by the hardware. Consult the appropriate Instruction manual for details of the ports available on specific hardware.

## 4.4. Client Side Map Descriptors

### 4.4.1. FieldServer Related Map Descriptor Parameters

Column Title	Function	Legal Values
Map_Descriptor_Name	Name of this Map Descriptor	Up to 32 alphanumeric characters
Data_Array_Name	Name of Data Array where data is to be stored in the FieldServer. Only used for commands 1,4,6,12.	One of the Data Array names from "Data Array" section above. Must be of type BIT
Data_Array_Location	Starting location in Data Array	0 to maximum specified in "Data Array" section above
Function	Function of Client Map Descriptor. A Command is a write, and a response is a read	RDBC, WRBC, WRBX

### 4.4.2. Driver Related Map Descriptor Parameters

Column Title	Function	Legal Values
Node_Name	Name of Node to fetch data from	One of the node names specified in "Client Node Descriptor" above
Data_Type	Data type	Dig_input or dig_output
Length	Length of Map Descriptor	1 to end of data block or less
Address	Starting address of read block	The start bit number of the data of interest
Command	The command id as given in the notes.	1,4,6,10,12,16
Network	The network number	1-255
Zone	The zone number	1-255 or 0 if the Zone is not configured on the Panel
Sector	The sector number	1-255 or 0 to read the average smoke level and highest alarms.
DA_Bit_Name	Name of Data Array where data is to be stored in the FieldServer. Used for command 10 and 16.	One of the Data Array names from "Data Array" section above. Must be of type BIT
DA_Bit_offset	Starting location in Data Array. Used for command 10 and 16	0 to maximum specified in "Data Array" section above
DA_Float_Name	Name of Data Array where data is to be stored in the FieldServer. Only used for command 10.	One of the Data Array names from "Data Array" section above. Must be of type FLOAT
DA_Float_offset	Starting location in Data Array. Only used for command 10	0 to maximum specified in "Data Array" section above
DA_Byte_Name	Name of Data Array where data is to be stored in the FieldServer. Only used for command 16.	One of the Data Array names from "Data Array" section above. Must be of type BYTE
DA_Byte_offset	Starting location in Data Array. Only used for command 16	0 to maximum specified in "Data Array" section above



### 4.4.3. Map Descriptor Example

Map_Descriptors											
Map_Descriptor_Name,	Data_Array_Name,	Data_Array_Offset,	Function,	Data_Type,	Node_Name,	Address,	Length,	Command,	Network,	Zone,	Sector
set_op-vesda_hli,	set_op,	0,	WRBC,	dig_output,	VESDA_HLI,	0,	8,	1,	0,	255,	-

Map_Descriptors														
Map_Descriptor_Name,	Zone,	Sector,	node_name,	Function,	DA_Bit_Name	DA_Float_Name,	DA_Bit_offset,	DA_Float_offset,	Data_Array_Offset,	Data_Type,	Command,	Network,	Address,	Length
rd-vesda_01_1,	0,	128,	VESDA_HLI,	rdbc,	VESDA01_1_	VESDA01_1_f,	0,	0,	0	dig_input,	10,	0,	0,	32
rd-vesda_01_2,	0,	64,	VESDA_HLI,	rdbc,	VESDA01_2_b	VESDA01_2_f,	0,	0,	0	dig_input,	10,	0,	0,	32
rd-vesda_01_3,	0,	32,	VESDA_HLI,	rdbc,	VESDA01_3_b	VESDA01_3_f,	0,	0,	0	dig_input,	10,	0,	0,	32
rd-vesda_01_4,	0,	16,	VESDA_HLI,	rdbc,	VESDA01_4_b	VESDA01_4_f,	0,	0,	0	dig_input,	10,	0,	0,	32

## 4.5. Common Applications and Examples

Each Command on the VESDA has a particular data format.

### 4.5.1. VESDA data format for command 1 (Set Operation)

This command is mandatory as it turns the VESDA system into a master slave relationship and is of type BIT. The content of the data is irrelevant. The format for the data is as follows:

#### Data Arrays

Column Title	Function	Legal Values
Data_Array_Name	Provide name for Data Array	Up to 15 alphanumeric characters
Data_Format	Provides data format	BIT
Data_Array_Length	Number of Data Objects	8

#### Client Side Map Descriptors

Column Title	Function	Legal Values
Map_Descriptor_Name	Name of this Map Descriptor	Up to 32 alphanumeric characters
Data_Array_Name	Name of Data Array where data is to be stored in the FieldServer	As above.
Data_Array_Location	Starting location in Data Array	0
Function	Function of Client Map Descriptor.	WRBC, WRBX
Node_Name	Name of Node to fetch data from	One of the node names specified in "Client Node Descriptor" above
Data_Type	Data type	dig_output
Length	Length of Map Descriptor	8
Address	Starting address of read block	0
Command	The command id as given in the notes.	1
Network	The network number	1-255
Zone	The zone number	1-255
Sector	The sector number	1-255

#### 4.5.2. VESDA data format for command 4 (Zone Update)

This request returns the Current Zone Status in a BIT data array. The format for the data is as follows:

##### Data Arrays

Column Title	Function	Legal Values
Data_Array_Name	Provide name for Data Array	Up to 15 alphanumeric characters
Data_Format	Provides data format	BIT
Data_Array_Length	Number of Data Objects	1 - 16

##### Client Side Map Descriptors

Column Title	Function	Legal Values
Map_Descriptor_Name	Name of this Map Descriptor	Up to 32 alphanumeric characters
Data_Array_Name	Name of Data Array where data is to be stored in the FieldServer	As above.
Data_Array_Location	Starting location in Data Array	0 -16
Function	Function of Client Map Descriptor.	RDBC
Node_Name	Name of Node to fetch data from	One of the node names specified in "Client Node Descriptor" above
Data_Type	Data type	dig_input
Length	Length of Map Descriptor	1-16 (must not overflow the data array)
Address	Starting address of read block	1-16
Command	The command id as given in the notes.	4
Network	The network number	1-255
Zone	The zone number	1-255
Sector	The sector number	1-255

##### Data Block Description<sup>2</sup>

BIT offset	Function	BIT offset	Function
0	Other Zone Info	8	Fault Power
1	Scanning	9	Fault Urgent
2	Autolearning	10	Fault Zone
3	Normalising	11	Fault System
4	Isolated	12	Alarm Fire2
5	Fault Filter	13	Alarm Fire1
6	Fault Airflow	14	Alarm Action
7	Fault Network	15	Alarm Alert

<sup>2</sup> 1 indicates TRUE; 0 indicates FALSE

### 4.5.3. VESDA data format for command 6 (Remote Input)

This command sends the Remote Input in a BIT data array.

#### Data Array

Column Title	Function	Legal Values
Data_Array_Name	Provide name for Data Array	Up to 32 alphanumeric characters
Data_Format	Provides data format	BIT
Data_Array_Length	Number of Data Objects	1 - 8

#### Client Map Descriptors

Column Title	Function	Legal Values
Map_Descriptor_Name	Name of this Map Descriptor	Up to 32 alphanumeric characters
Data_Array_Name	Name of Data Array where data is to be stored in the FieldServer	As above.
Data_Array_Location	Starting location in Data Array	0 -8
Function	Function of Client Map Descriptor.	WRBX
Node_Name	Name of Node to fetch data from	One of the node names specified in "Client Node Descriptor" above
Data_Type	Data type	dig_output
Length	Length of Map Descriptor	1-8 (must not overflow the data array)
Address	Starting address of read block	1-8
Command	The command id as given in the notes.	6
Network	The network number	1-255
Zone	The zone number	1-255
Sector	The sector number	1-255

#### Data Block Description<sup>34</sup>

BIT offset	Function
0	Stop Test
1	Scan Start
2	Start Test
3	Silence
4	De-Isolate
5	Isolate
6	Reset
7	Reserved

<sup>3</sup> 1 indicates TRUE; 0 indicates FALSE

<sup>4</sup> ONLY 1 OF THE 8 BITS MAY BE SET IN ONE COMMAND

#### 4.5.4. VESDA data format for command 12 (Current Fault Status)

This request returns the Current Fault Status in a BYTE data array. The format for the data is as follows:

##### Data Arrays

Column Title	Function	Legal Values
Data_Array_Name	Provide name for Data Array	Up to 15 alphanumeric characters
Data_Format	Provides data format	BYTE
Data_Array_Length	Number of Data Objects	1 – 21

##### Client Side Map Descriptors

Column Title	Function	Legal Values
Map_Descriptor_Name	Name of this Map Descriptor	Up to 32 alphanumeric characters
Data_Array_Name	Name of Data Array where data is to be stored in the FieldServer	As above.
Data_Array_Location	Starting location in Data Array	0
Function	Function of Client Map Descriptor.	RDBC
Node_Name	Name of Node to fetch data from	One of the node names specified in "Client Node Descriptor" above
Data_Type	Data type	dig_input
Length	Length of Map Descriptor	1-21 (must not overflow the data array)
Address	Starting address of read block	0
Command	The command id as given in the notes.	12
Network	The network number	1-255
Zone	The zone number	1-255
Sector	The sector number	1-255

##### Data Block Description<sup>5</sup>

BYTE offset	Function
0	Number of faults
1 - 20	Fault list

<sup>5</sup> 1 indicates TRUE; 0 indicates FALSE

#### 4.5.5. VESDA data format for command 10 (Update Display Status)

This request returns the Current Display Status in a split data array (2 data arrays of different type in one map descriptor). The format for the data is as follows:

##### Data Arrays 1

Column Title	Function	Legal Values
Data_Array_Name	Provide name for Data Array	Up to 15 alphanumeric characters
Data_Format	Provides data format	BIT
Data_Array_Length	Number of Data Objects	32

##### Data Arrays 2

Column Title	Function	Legal Values
Data_Array_Name	Provide name for Data Array	Up to 15 alphanumeric characters
Data_Format	Provides data format	FLOAT
Data_Array_Length	Number of Data Objects	32 (only first position used)

##### Client Side Map Descriptors

Column Title	Function	Legal Values
Map_Descriptor_Name	Name of this Map Descriptor	Up to 32 alphanumeric characters
Data_Array_Location	Starting location in Data Array	0
Function	Function of Client Map Descriptor	RDBC
Node_Name	Name of Node to fetch data from	One of the node names specified in "Client Node Descriptor" above
Data_Type	Data type	Dig_input
Length	Length of Map Descriptor	32
Address	Starting address of read block	0
Command	The command id	10
Network	The network number	1-255
Zone	The zone number	1-255
Sector	The sector number	1-255
DA_Bit_Name	Name of Data Array where data is to be stored in the FieldServer.	Data Array 1 name
DA_Bit_offset	Starting location in Data Array.	0
DA_Float_Name	Name of Data Array where data is to be stored in the FieldServer.	Data Array 2 name
DA_Float_offset	Starting location in Data Array.	0

**Data Block 1 Description<sup>6</sup>**

BIT offset	Function
0	Reserved Flash
1	Fault Filter Flash
2	Fault Airflow Flash
3	Fault Network Flash
4	Fault Power Flash
5	Fault Urgent Flash
6	Fault Zone Flash
7	Fault System Flash
8	OK Flash
9	Isolate Flash
10	Fault Minor Flash
11	Fault Major Flash
12	Alarm Fire2 Flash
13	Alarm Fire1 Flash
14	Alarm Action Flash
15	Alarm Alert Flash
16	Reserved
17	Fault Filter
18	Fault Airflow
19	Fault Network
20	Fault Power
21	Fault Urgent
22	Fault Zone
23	Fault System
24	OK
25	Isolate
26	Fault Minor
27	Fault Major
28	Alarm Fire2
29	Alarm Fire1
30	Alarm Action
31	Alarm Alert

**Data Block 2 Description**

FLOAT offset	Function
0	Average Smoke Level (Sector must be set to zero)

<sup>6</sup> 1 indicates TRUE; 0 indicates FALSE

#### 4.5.6. VESDA data format for command 16 (Update Airflow Status)

This request returns the Current Airflow Status in a split data array (2 data arrays of different type in one map descriptor). The format for the data is as follows:

##### Data Arrays 1

Column Title	Function	Legal Values
Data_Array_Name	Provide name for Data Array	Up to 15 alphanumeric characters
Data_Format	Provides data format	BIT
Data_Array_Length	Number of Data Objects	4

##### Data Arrays 2

Column Title	Function	Legal Values
Data_Array_Name	Provide name for Data Array	Up to 15 alphanumeric characters
Data_Format	Provides data format	BYTE
Data_Array_Length	Number of Data Objects	4

##### Client Side Map Descriptors

Column Title	Function	Legal Values
Map_Descriptor_Name	Name of this Map Descriptor	Up to 32 alphanumeric characters
Data_Array_Location	Starting location in Data Array	0
Function	Function of Client Map Descriptor	RDBC
Node_Name	Name of Node to fetch data from	One of the node names specified in "Client Node Descriptor" above
Data_Type	Data type	Dig_input
Length	Length of Map Descriptor	4
Address	Starting address of read block	0
Command	The command id	16
Network	The network number	1-255
Zone	The zone number	1-255
Sector	The sector number	1-255
DA_Bit_Name	Name of Data Array where data is to be stored in the FieldServer.	Data Array 1 name
DA_Bit_offset	Starting location in Data Array.	0
DA_Byte_Name	Name of Data Array where data is to be stored in the FieldServer.	Data Array 2 name
DA_Byte_offset	Starting location in Data Array.	0



**Data Block 1 Description<sup>7</sup>**

BIT offset	Function
0	Pipe1 status
1	Pipe2 status
2	Pipe3 status
3	Pipe4 status

**Data Block 2 Description**

BYTE offset	Function
0	Airflow in pipe 1 as percentage of normalised pipe airflow.
1	Airflow in pipe 2 as percentage of normalised pipe airflow.
2	Airflow in pipe 3 as percentage of normalised pipe airflow.
3	Airflow in pipe 4 as percentage of normalised pipe airflow.

**4.5.7. Reading Smoke Levels on the VESDA Panels**

The Vesda panel only allows the driver to read the average Smoke Level on all the ports. Polling for individual sector smoke levels will always return a value of zero.

**Zone setup**

If the zone on the Panel has not been configured the zone must be set to zero in the FieldServer configuration file.

**Sector setup**

Setting the sector to zero will allow the driver to poll for the average smoke level.

**4.5.8. VESDA Panel start-up delay.**

When the HLI is powered on the FieldServer will not be able to communicate with the Panel for 10 to 30 seconds. During this time the HLI starts up its application code and initializes various internal parameters.

<sup>7</sup> 1 indicates OPEN; 0 indicates CLOSE

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